

Appl No: 10/807,846
Art Unit: 1712 Docket No.: B03-31
Reply to Final Office Action of March 16, 2006

REMARKS

Claims 1-4, 7, 8, 12, 14-30, 33, 34, 36, 37, and 39-55 appear in this application for the Examiner's review and consideration.

Claim 1 has been amended to recite that the solution-converted polybutadiene is substantially free of crosslinking, cyclization and gel formation. Claims 1 and 25 have been amended to recite that the radiation source is a gamma radiation source.

Claims 10 and 13 have been cancelled without prejudice to Applicants' right to file one or more continuing applications directed to any subject matter not presently claimed.

No new matter has been added by these amendments and additions.

Rejections Over Bissonnette '834

Claims 1-4, 7, 8, 10, 12, and 13 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Bissonnette '834. Applicants respectfully submit that Bissonnette does not disclose all elements recited in independent claim 1 of the present invention. In particular, Bissonnette fails to disclose the use of a radiation source to solution convert *cis* to *trans* and the use of a sensitizer, let alone one selected from the group consisting of allyl bromide, carbon tetrabromide, bromobenzene, phenyl sulfide, allyl sulfide, phenyl disulfide, isobutyl disulfide, allyl mercaptan, thio-2-naphthol and elemental bromine. Moreover, Bissonnette does not disclose that the solution-converted polybutadiene is substantially free of crosslinking, cyclization and gel formation.

Further, Bissonnette does not suggest or teach all elements, either directly or indirectly. Bissonnette is generally directed to forming a high-*trans* polybutadiene rubber material by a "conversion reaction of an amount of polybutadiene, a free radical source, and a *cis*-to-*trans* catalyst including at least one organosulfur component, inorganic sulfide component, an aromatic organometallic compound, a metal-organosulfur compound, elemental sulfur, a polymeric sulfur, or an aromatic organic compound. This conversion reaction is accomplished at a sufficient reaction temperature to form a polybutadiene reaction product that includes an amount of *trans*-polybutadiene greater than the amount of *trans*-polybutadiene present before the conversion reaction..." See Bissonnette at paragraph [0062].

The skilled artisan, reading Bissonnette, would be aware that a high-*trans* polybutadiene rubber suitable for golf ball use would require a high *trans* content, low vinyl content, high

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molecular weight, low polydispersity, and low branching rubber. The skilled artisan would also readily recognize that, using the method disclosed in Bissonnette, the resultant high-trans butadiene rubber would exhibit, at best, three out of these five features – otherwise the rubber compositions will contain a high count of volatiles or other low molecular weight tails.

The advantage and difference of the present invention over Bissonnette allows Applicants to tailor the properties, in advance of solution polymerization, that results in a very good golf ball polymer, made better by the solution conversion. No exotic polymerization catalysts or extreme polymerization conditions are needed. Since the solution conversion in the present application is done while the polymer is still in solution, this is a more commercially viable process as well.

The rejections under 35 U.S.C. §§ 102(e) and 103(a) are believed to have been overcome for at least the above reasons. Applicants respectfully request reconsideration and withdrawal thereof.

Rejection Over Bissonnette '834 in view of Golub '175

Claims 1-4, 7, 8, 10, 12, 13, 25-30, 33, 34, 36, and 37 were rejected under 35 U.S.C. § 103(a) as being obvious over Bissonnette in view of Golub '175. Golub is generally directed to a method for isomerizing *cis*-1,4 structures in polybutadiene to *trans*-1,4 structures. Applicants respectfully submit that the combination of Golub and Bissonnette fail to disclose or even suggest the present invention.

The deficiencies of Bissonnette, with respect to claim 1, are set forth above. With respect to independent claim 25 of the present invention, Bissonnette fails to disclose or suggest creating a solution of polybutadiene; mixing an amount of a photo-sensitizer with the polybutadiene in solution under an inert atmosphere; exposing the mixture to a gamma source of radiation for a sufficient amount of time to increase the amount of *trans*-polybutadiene in the polybutadiene in solution to a level of 20% to 60%; and recovering the polybutadiene which comprises less than 7% vinyl isomer and is substantially free of crosslinking, cyclization and gel formation.

Golub also fails to disclose all elements recited in claims 1 and 25 of the present invention. Golub fails to disclose mixing an amount of a photo-sensitizer with the polybutadiene in solution under an inert atmosphere and that the resultant solution-converted polybutadiene is substantially free of crosslinking, cyclization and gel formation. Additionally, Golub fails to disclose the use of gamma radiation to effect the isomerization in solution.

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As stated above, the combination of these references fail to disclose the elements recited in independent claim 1 of the present invention and they certainly fail to disclose or even suggest the method steps recited in independent claim 25 of the present invention.

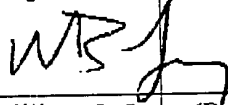
The rejection under 35 U.S.C. § 103(a) is believed to have been overcome for at least the above reasons. Applicants respectfully request reconsideration and withdrawal thereof.

CONCLUSION

Based on the remarks set forth above, Applicants believe that all of the rejections have been overcome and the claims of the subject application are in condition for allowance. Should the Examiner have any further concerns or believe that a discussion with the Applicants' attorney would further the prosecution of this application, the Examiner is encouraged to call the attorney at the number below.

No fee is believed to be due for this submission. Should any other required fees be due, however, please charge them to Acushnet Company Deposit Account No. 502309.

Respectfully submitted,



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